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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,319	06/19/2001	Mark A. Stan	1613370-0006	4594

7470 7590 03/26/2007

WHITE & CASE LLP
PATENT DEPARTMENT
1155 AVENUE OF THE AMERICAS
NEW YORK, NY 10036

EXAMINER	
BARTON, JEFFREY THOMAS	
ART UNIT	**PAPER NUMBER**
1753	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	09/885,319	STAN ET AL.	
	Examiner	Art Unit	
	Jeffrey T. Barton	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *54-56,58-82,105-111 and 115-120* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *105-111 and 115-120* is/are allowed.

6)☒ Claim(s) *54-56 and 58-82* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12 January 2007 has been entered.

Priority

2. Applicant's amendment of the specification to change the indicated filing date of Provisional Application 60/212,552 to June 20,2000 is noted. This date corresponds to the filing date of record in the Office.

Oath/Declaration

3. The declaration filed on 12 January 2007 is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

> The oath or declaration is defective because:
> It has not been signed by all inventors. Frank A. Spadafora has not signed the declaration. Note MPEP §603.

Status of Objections and Rejections Pending Since the

Office Action of 12 July 2006

4. All rejections of claims 98-104 and 112-114 are obviated due to cancellation of the claims.

5. The objection to claim 65 is withdrawn due to Applicant's amendment.

6. All other rejections are maintained.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 65-68 and 71 are rejected under 35 U.S.C. 102(b) as being anticipated by Chiang et al, Experimental Results of $GaInP_2$/GaAs/Ge Triple Junction Cell Development for Space Power Systems," 25th IEEE PVSC, May 13-17,1996, pages 183-186.

As seen in Figure 2 at page 184, Chiang et al teaches a triple junction solar cell having a germanium (Ge) substrate with a subcell formed therein with an n-type Ge

layer overlying a p-type Ge substrate, and wherein the n-type Ge layer is formed by diffusion of arsenic; and a GaInP back surface passivating layer formed beneath a GaAs middle subcell, wherein said GaInP layer reads on the instant barrier layer (see also the paragraph bridging pages 183 and 184). In particular, it is the Examiner's position that Chiang et al's GaInP layer will inherently prevent diffusion of arsenic from said middle GaAs cell into the Ge substrate. Since Chiang et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

9. Claims 54-56, 59-67, 69, 71, and 72 are rejected under 35 U.S.C. 102(e) as being anticipated by Ermer et al (U.S. Patent 6,380,601).

Ermer et al discloses a multijunction solar cell having a germanium substrate (22) doped with an n-type dopant; a nucleation layer (34) comprising of indium gallium phosphide (InGaP), a second cell layer (36) of gallium arsenide (GaAs), and a third cell layer (44) of InGaP (see col. 2, line 53 to col. 4, line 46). The nucleation layer (34) is formed at a preferred thickness of 25 Angstrom to 500 Angstrom and has a lattice parameter at a desired degree of lattice matching to the substrate (22) either "matched, or selectively made non-matching" (see col. 3, lines 28-49). The solar cell of Ermer et al would inherently absorb radiation ranging from UV radiation to a wavelength of 1800 nm through the use of Ge, GaAs and InGaP layers. Phosphorous is the preferred n-type dopant in the Ge substrate 22 (see col. 3, line 1). The junction depth in the Ge substrate (22) ranges from 0.1 microns to 3 microns (see col. 3, lines 7-10).

As subsequent layers are formed, the nucleation layer (34) would control the diffusion of dopant atoms into the substrate (22). At the elevated temperatures at which the semiconductor layers are formed, solid state diffusion of dopants, such as arsenic from the GaAs layer (36), would be controlled by the thickness of the nucleation layer (34). Ermer et al discloses that "the invention allows for better passivation of the germanium homojunction substrate and shallower doping profiles with better control over diffused dopant concentrations" (see col. 1, lines 63-66).

Since Ermer et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 65 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olson (U.S. Patent 5,342,453).

With respect to claims 65 and 71, Olson teaches a solar cell comprising a substrate that can be germanium (Ge), a $GaInP_2$ passivating layer in direct contact with the substrate; and a solar cell containing GaAs over the passivating layer (see col. 3, line 22 through col. 4, line 50; and claims 10, 11, and 15-17; and Figure 1). Said $GaInP_2$ passivating layer reads on the barrier layer in instant claims 65 and 71. With respect to claim 61, it is the Examiner's position that Olson's solar cell is capable of photoactively converting radiation ranging from approximately UV radiation to radiation having a wavelength of approximately 1800 nm. Olson teaches the limitations of the instant claims, other than the difference which is discussed below.

Olson does not specifically require the Ge be used as the substrate since the substrate can be selected from three other substrates (see claims 10 and 15). However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Ge as the substrate in Olson's solar cell because such is clearly within the scope of Olson's disclosure.

14. Claim 72 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olson as applied to claims 65 and 71 above, and further in view of Friedman et al, "Back Surface Fields for $GaInP_2$ Solar Cells," IEEE, (1991), pages 358-360.

Olson, as relied upon for the reasons recited above, teaches the limitations of claim 72, the difference being that Olson does not specifically teach the thickness of its $GaInP_2$ passivating layer. Friedman teaches a $GaInP_2$ back surface field passivating layer having a thickness of 0.02 microns, i.e., 200 Angstroms (see the entire document, in particular Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared Olson's $GaInP_2$ passivating layer such that it has a thickness of 200 Angstroms because such is a conventional thickness of a $GaInP_2$ passivating layer, as shown by Friedman et al.

15. Claims 65-68, 71, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al, Experimental Results of $GaInP_2$/GaAs/Ge Triple Junction Cell Development for Space Power Systems," 25th IEEE PVSC, May 13-

17,1996, pages 183-186, in view of Friedman et al, "Back Surface Fields for $GaInP_2$ Solar Cells," IEEE, (1991), pages 358-360.

As seen in Figure 2 at page 184, Chiang et al teaches a triple junction solar cell having a germanium (Ge) substrate with a subcell formed therein with an n-type Ge layer overlying a p-type Ge substrate, and wherein the n-type Ge layer is formed by diffusion of arsenic; and a GaInP back surface passivating layer formed beneath a GaAs middle subcell, wherein said GaInP layer reads on the instant barrier layer (see also the paragraph bridging pages 183 and 184). In particular, it is the Examiner's position that Chiang et al's GaInP layer will inherently prevent diffusion of arsenic from said middle GaAs cell into the Ge substrate. Chiang et al teaches the limitations of the instant claims, other than the difference which is discussed below.

Chiang et al does not specifically teach the thickness of its GaInP back surface field passivating layer, whereas said claim 72 specifies a thickness of 350 Angstroms or less. Friedman teaches a $GaInP_2$ back surface field passivating layer having a thickness of 0.02 microns, i.e., 200 Angstroms (see the entire document, in particular Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared Chiang et al's GaInP back surface field passivating layer such that it has a thickness of 200 Angstroms because such is a conventional thickness of a GaInP back surface field passivating layer, as shown by Friedman et al.

16. Claims 65-68, 71, and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al, Experimental Results of $GaInP_2$/GaAs/Ge Triple Junction Cell Development for Space Power Systems," 25th IEEE PVSC, May 13-17,1996, pages 183-186, in view of Stanbery (U.S. Patent 4,322,571).

As seen in Figure 2 at page 184, Chiang et al teaches a triple junction solar cell having a germanium (Ge) substrate with a subcell formed therein with an n-type Ge layer overlying a p-type Ge substrate, and wherein the n-type Ge layer is formed by diffusion of arsenic; and a GaInP back surface passivating layer formed beneath a GaAs middle subcell, wherein said GaInP layer reads on the instant barrier layer (see also the paragraph bridging pages 183 and 184). In particular, it is the Examiner's position that Chiang et al's GaInP layer will inherently prevent diffusion of arsenic from said middle GaAs cell into the Ge substrate. Chiang et al teaches the limitations of the instant claims, other than the difference which is discussed below.

Chiang et al does not specifically teach the formation of a two-step diffusion profile in the Ge substrate. Stanbery discloses a method for forming a solar cell with a two-step diffusion profile. The solar cell has areas with a deep junction, which has a high thermal stability, an areas of shallow junctions, which have high light-to-electrical energy conversion efficiencies (col. 5, lines 64-68).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the solar cell of Chiang et al so as to use a two-step diffusion profile as taught by Stanbery because the two-step diffusion profile has high thermal stability and a high conversion efficiency.

17. Claims 65-71, 74-76, and 78-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al, Experimental Results of $GaInP_2$/GaAs/Ge Triple Junction Cell Development for Space Power Systems," 25th IEEE PVSC, May 13-17,1996, pages 183-186, in view of Wiesmann (U.S. Patent 4,634,605).

As seen in Figure 2 at page 184, Chiang et al teaches a triple junction solar cell having a germanium (Ge) substrate with a subcell formed therein with an n-type Ge layer overlying a p-type Ge substrate, and wherein the n-type Ge layer is formed by diffusion of arsenic; and a GaInP back surface passivating layer formed beneath a GaAs middle subcell, wherein said GaInP layer reads on the instant barrier layer (see also the paragraph bridging pages 183 and 184). In particular, it is the Examiner's position that Chiang et al's GaInP layer will inherently prevent diffusion of arsenic from said middle GaAs cell into the Ge substrate. Chiang et al teaches the limitations of the instant claims, other than the difference which is discussed below.

Chiang et al does not specifically teach that its n-type Ge layer is formed by diffusion of phosphorous or both phosphorous and said arsenic. Wiesmann discloses the use of both arsenic and phosphorous in combination as an n-type dopant (col. 7, lines 21-25). The use of arsenic and phosphorous as n-type dopants is very well known in the art, and they are functional equivalents of each other.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the n-type dopant in the solar cell of Chiang et al so as to use phosphorous or both phosphorous and arsenic, as taught by Wiesmann,

because phosphorous and arsenic are functional equivalents. With respect to claim 74 and its dependent claims, it would have been well within the skill of an artisan to have used, for example, much more phosphorous dopant than arsenic dopant, thus resulting in a higher concentration of phosphorous atoms than arsenic atoms throughout the diffusion region (including the upper portion has here claimed), which the expectation that an n-doped geranium diffusion layer would be obtained in a working solar cell.

18. Claims 72 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al in view of Wiesmann as applied to claims 65-71, 74-76, and 78-82 above, and further in view of Friedman et al, "Back Surface Fields for $GaInP_2$ Solar Cells," IEEE, (1991), pages 358-360.

Chiang et al in view of Wiesmann, as relied upon for the reasons recited above, teaches the limitations of claims 72 and 77, the difference being that Chiang et al does not specifically teach the thickness of its GaInP back surface field passivating layer, whereas said claims 72 and 77 specify a thickness of 350 Angstroms or less. Friedman teaches a $GaInP_2$ back surface field passivating layer having a thickness of 0.02 microns, i.e., 200 Angstroms (see the entire document, in particular Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared Chiang et al's GaInP back surface field passivating layer such that it has a thickness of 200 Angstroms because such is a conventional thickness of a GaInP back surface field passivating layer, as shown by Friedman et al.

19. Claims 54-56, 58-72 and 74-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ermer et al (U.S. Patent 6,380,601) in view of Wiesmann (U.S. Patent 4,634,605).

Ermer et al discloses a multijunction solar cell having a germanium substrate (22) doped with an n-type dopant; a nucleation layer (34) comprising of indium gallium phosphide (InGaP), a second cell layer (36) of gallium arsenide (GaAs), and a third cell layer (44) of InGaP (see col. 2, line 53 to col. 4, line 46). The nucleation layer (34) is formed at a preferred thickness of 25 Angstrom to 500 Angstrom and has a lattice parameter at a desired degree of lattice matching to the substrate (22) either "matched, or selectively made non-matching" (see col. 3, lines 28-49). The solar cell of Ermer et al would inherently absorb radiation ranging from UV radiation to a wavelength of 1800 nm through the use of Ge, GaAs and InGaP layers. Phosphorous is the preferred n-type dopant in the Ge substrate 22 (see col. 3, line 1). The junction depth in the Ge substrate (22) ranges from 0.1 microns to 3 microns (see col. 3, lines 7-10).

As subsequent layers are formed, the nucleation layer (34) would control the diffusion of dopant atoms into the substrate (22). At the elevated temperatures at which the semiconductor layers are formed, solid state diffusion of dopants, such as arsenic from the GaAs layer (36), would be controlled by the thickness of the nucleation layer (34). Ermer et al discloses that "the invention allows for better passivation of the germanium homojunction substrate and shallower doping profiles with better control over diffused dopant concentrations" (see col. 1, lines 63-66).

Ermer et al teaches the limitations of the instant claims, other than the difference which is discussed below.

Ermer et al does not specifically teach the use of arsenic or both phosphorous and arsenic in place of the phosphorous that is used to form the n-type dopant layer in its Ge substrate (22). Wiesmann discloses arsenic, phosphorous, or the use of both arsenic and phosphorous in combination as an n-type dopant (col. 7, lines 21-25). The use of arsenic and phosphorous as n-type dopants is very well known in the art, and they are functional equivalents of each other.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the n-type dopant in the solar cell of Ermer et al so as to use arsenic or both phosphorous and arsenic, as taught by Wiesmann, because phosphorous and arsenic are functional equivalents. With respect to claim 74 and its dependent claims, it would have been well within the skill of an artisan to have used, for example, much more phosphorous dopant than arsenic dopant, thus resulting in a higher concentration of phosphorous atoms than arsenic atoms throughout the diffusion region (including the upper portion has here claimed), which the expectation that an n-doped geranium diffusion layer would be obtained in a working solar cell.

20. Claim 73 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ermer et al in view of Wiesmann as applied to claims 54-56, 58-72 and 74-82 above, and further in view of Stanbery (U.S. Patent 4,322,571).

Ermer et al in view of Wiesmann, as relied upon for the reasons recited above, teaches the limitations of claim 73, the difference being that Ermer et al in view of Wiesmann does not specifically teach the formation of a two-step diffusion profile, i.e., first and second diffusion sublayers in the Ge substrate. Stanbery discloses a method for forming a solar cell with a two-step diffusion profile. The solar cell has areas with a deep junction, which has a high thermal stability, an areas of shallow junctions, which have high light-to-electrical energy conversion efficiencies (col. 5, lines 64-68).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the solar cell of Ermer et al in view of Wiesmann so as to use a two-step diffusion profile as taught by Stanbery because the two-step diffusion profile has high thermal stability and a high conversion efficiency.

Response to Arguments

21. Applicant's arguments filed 12 January 2007 have been fully considered but they are not persuasive.

Applicant argues that the GaInP layer of Chiang et al cannot prevent diffusion of arsenic into the substrate, since an arsenic containing layer is present in direct contact with the germanium substrate. However, this argument is not deemed to be persuasive because Chiang et al's GaAs tunnel junction layers are not excluded by the "comprising" language of instant claim 65. Claim 65 recites, "a barrier layer overlying said substrate and underneath said solar subcell layer and functioning to inhibit the diffusion of arsenic into the germanium substrate." Chiang et al's GaInP layer will

prevent diffusion of arsenic from the middle GaAs cell into the substrate, and thus, meets the limitation of the instant claim. Any degree of inhibition of diffusion meets the broad limitation of this claim, and the structure of Chiang et al would provide such inhibition.

Applicant argues that the Rule 1.131 Declaration filed August 3, 2004 establishes that the instant invention is invented prior to March 29, 1999, i.e., the U.S. filing date of Ermer et al. However, this argument is not deemed to be persuasive for the following reasons. None of claim 54 and its dependent claims is commensurate in scope with the particular solar cell prepared as seen in the data of said Declaration. Likewise, none of instant claims 65-82 are commensurate in scope with the particular solar cell prepared as seen in the data of said Declaration. Furthermore, none of the data in said Declaration show what is now recited in instant claims 65-82. For example, the declaration fails to show "a diffused photoactive germanium junction in the substrate", as required in claim 54, or "a solar subcell layer overlying said substrate and composed of GaAs", as required in claim 65.

Applicant argues that Olson et al do not disclose a germanium substrate, but this is not persuasive because Olson et al clearly suggest using a germanium substrate at column 4, lines 48-50. Applicant's arguments are clearly erroneous.

Allowable Subject Matter

22. Claims 105-111 and 115-120 are allowed.

23. The following is an examiner's statement of reasons for allowance: Claims 105-11 and 115-120 are identical to corresponding claims allowed in the Notice of Allowability and Reasons for Allowance mailed March 24, 2004.

Conclusion

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Jeffrey T. Barton whose telephone number is (571) 272-1307. The examiner can normally be reached on M-F 9:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JTB

NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

20 March 2007